3.3.7.1 Central Sands Pine – Oak Forest

3.3.7.1.1 Community Overview

This forest community is associated with, but not limited to, the Central Sands ecoregion. Moisture conditions vary from dry to borderline dry-mesic. Soils are coarse-textured, acid sands, on landforms that can include glacial outwash, lakeplain, old dunes, and eroded sandstone-cored ridges. The canopy co-dominants vary, but in older, relatively undisturbed stands they may include white and red pines, various oaks, and sometimes red maple, black cherry and bigtooth aspen. The depauperate understory of the drier sites is composed of a small number of vascular plants that usually include huckleberry, early blueberry, bracken fern, wood anemone, and Pennsylvania sedge. Jack pine is sometimes co-dominant on the driest sites (jack pine - black/Hill's oak-dominated stands may be split out in the future).

3.3.7.1.2 Vertebrate Species of Greatest Conservation Need Associated with Central Sands Pine – Oak Forest

Eleven vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with Central Sands pine – oak forest (Table 3-142).

Table 3-142. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with Central Sands pine – oak forest communities.

Species Significantly Associated with Central Sands Pine – Oak Forest
Birds
Whip-poor-will
Herptiles
Ornate Box Turtle
Mammals
Gray Wolf
Species Moderately Associated with Central Sands Pine – Oak Forest
Birds
Red-headed Woodpecker
Herptiles
Prairie Ringneck Snake
Bullsnake
Mammals
Northern Long-eared Bat
Silver-haired Bat
Eastern Red Bat
Hoary Bat
Woodland Vole

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-142 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both Central Sands pine – oak forest and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for

protection, restoration, and/or management of Central Sands pine – oak forest in each of the Ecological Landscapes (Tables 3-143 and 3-144).

- Using the analysis described above, a species was further selected if it had both a significant association with Central Sands pine – oak forest and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of Central Sands pine – oak forest. These species are shown in Figure 3-33.

Table 3-143. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with Central Sands pine – oak forest communities and their association with Ecological Landscapes that support Central Sands pine – oak forest.

Central Sands Pine - Oak Forest	Birds (1)*	Herptiles (1)	Mammals (1)
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Whip-poor-will	Ornate Box Turtle	Gray Wolf
MAJOR			
Central Sand Hills			
Central Sand Plains			

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Color Key

- = **HIGH probability the species occurs in this Ecological Landscape**
- = **MODERATE probability the species occurs in this Ecological Landscape**
- = **LOW or NO probability the species occurs in this Ecological Landscape**

Table 3-144. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with Central Sands pine – oak forest communities and their association with Ecological Landscapes that support Central Sands pine – oak forest.

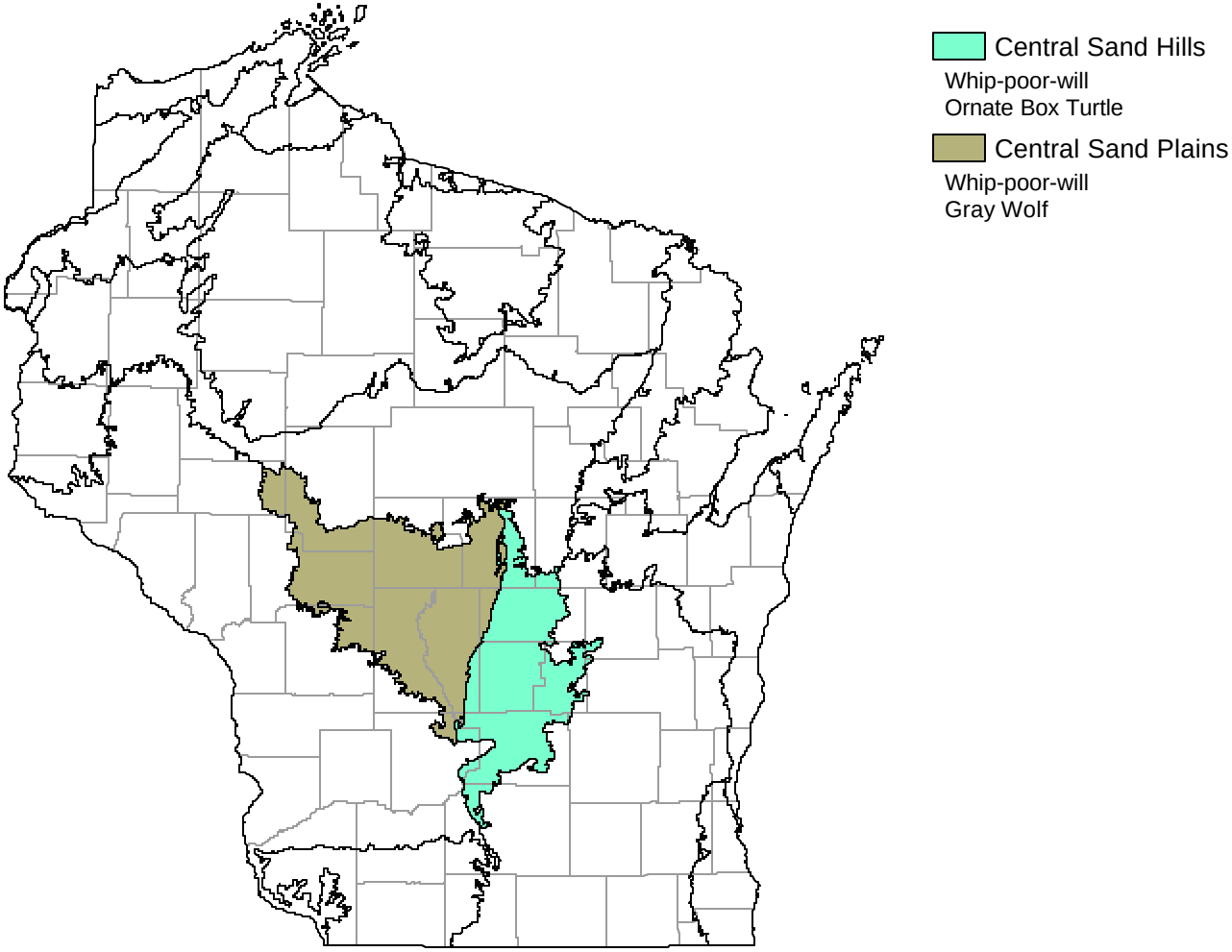
Central Sands Pine - Oak Forest	Birds (1)*	Herptiles (2)		Mammals (5)				
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Red-headed Woodpecker	Prairie Ringneck Snake	Bullsnake	Northern Long-eared Bat	Silver-haired Bat	Eastern Red Bat	Hoary Bat	Woodland Vole
MAJOR								
Central Sand Hills								
Central Sand Plains								

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Color Key

- = **HIGH probability the species occurs in this Ecological Landscape**
- = **MODERATE probability the species occurs in this Ecological Landscape**
- = **LOW or NO probability the species occurs in this Ecological Landscape**

Figure 3-33. Vertebrate Species of Greatest Conservation Need that have *both* a significant association with Central Sands pine – oak forest *and* a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of Central Sands pine – oak forest.



3.3.7.1.3 Threats and Priority Conservation Actions for Central Sands Pine – Oak Forest

3.3.7.1.3.1 Statewide Overview of Treats and Priority Conservation Actions for Central Sands Pine – Oak Forest

The following list of threats and priority conservation actions were identified for the Central Sands pine-oak forest in Wisconsin. The threats and priority conservation actions described below apply to all Ecological landscapes in Section 3.3.7.1.3.2 unless otherwise indicated.

Threats and Issues

- Large patches and older forests are underrepresented as compared with the numerous smaller and relatively young forest patches.
- Absence of fire makes it difficult to maintain and regenerate species that are adapted to periodic fire disturbance.
- Fragmentation is an issue, due to developments such as roads and residence construction, and the scale, pattern, and type of harvest that is generally practiced for this type.
- Unsustainable forest practices, such as harvest during improper seasons or on steep erodible slopes, can result in the release of sediments to nearby aquatic systems and wetlands.
- Invasive plants, such as garlic mustard, common buckthorn, and Tatarian honeysuckle are serious problems in some of the southernmost lands, and little provision is being made to prevent their spread or control them farther north.
- Some of the oaks that are important in this type are vulnerable to potential damage from gypsy moth infestations.
- Stand and ecosystem level simplification is taking place, especially where monocultures of planted pines are replacing stands dominated by oaks of low commercial value, or species that are difficult to manage because of susceptibility to pests (e.g., jack pine and jack pine budworm, and now, black oak and gypsy moth).
- Jack pine forests are declining statewide due to lack of fire disturbance, difficulty in obtaining natural regeneration, and low economic value as compared with red pine.
- There is a tendency in some areas to emphasize and encourage growth of either the pines or the oaks - but usually not a mixture of both, and as a consequence the mixed forests are underrepresented.
- Structural features such as large trees, standing snags, coarse woody debris, windthrow gaps, and pit and mound microtopography are often reduced or absent from intensively managed stands.
- In this forest type, gaps can create refugia for understory plants and associated animals that require relatively high light levels (e.g., species with prairie or barrens affinities).
- Motorized recreation and high road densities can contribute to soil loss and sedimentation, and facilitate the spread of invasive plants.

Priority Conservation Actions

- Maintain large forest blocks of this type where they exist, and increase connectivity where feasible.
- Work toward a balanced mosaic of age-classes; older age classes are currently underrepresented.
- Mixed pine-oak forests contribute significantly to the character and diversity of the forest, and it is desirable to maintain or restore them to represent the range of variability expressed by the type, in a range of patch sizes and age classes.
- Use adaptive management techniques to restore and maintain structure and composition, and maintain the mixed character of many stands; monitor and share results.
- Encourage the use of prescribed fire to restore and maintain the variability of composition and structure in this community, and increase species diversity.
- Develop educational tools and demonstration areas that promote benefits of prescribed fire, and address liability concerns.
- Encourage retention and natural regeneration of oak species.

- Intensively managed industrial and county forests can fill a niche in providing early successional habitats in some Ecological Landscapes.
- Monitor and control invasive plants and invertebrates.
- Continue to support biological control research to develop more effective methods of controlling invasive organisms.
- Limit activities that facilitate the spread of invasive species, particularly into non-infested areas.
- Use Best Management Practices and other sustainable forest community management practices to prevent detrimental soil and water effects.
- Manage recreational uses so they are compatible with protecting the environment (e.g., limiting erosion, controlling spread of invasives, preventing damage to sensitive soils and vegetation).
- Refinement of the dry forest classification from the perspective of maintaining or restoring diversity is needed.

3.3.7.1.3.2 Additional Considerations for Central Sands Pine – Oak Forest by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of the Central Sands pine – oak forest exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for northern wet forest found in Section 3.3.7.1.3.1.

Additional Considerations for Central Sands Pine – Oak Forest in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management of Central Sands Pine – Oak Forest

Central Sand Hills

Occurrences of this type are found at Emmons Creek State Fishery Area (Portage County), Hartman Creek State Park (Portage and Waupaca Counties), and Standing Rocks County Park (Portage County). Additional field inventory is desirable in parts of this Ecological Landscape.

Central Sand Plains

This Ecological Landscape is the best place to maintain large forest blocks for this type, and to implement the other conservation actions (e.g., encourage species and structural diversity, achieve balanced age-class distributions) because of the abundance of the type and the large public ownership. Fragmentation is a particular problem in some parts of this Ecological Landscape, due to residential development and road construction.

Areas near the Wisconsin River were the first of the historic "pineries" to be logged during the Cutover. White pine forests are now regenerating in the Central Sand Plains, but are still considerably younger and smaller than the original pineries. A proportion of these white pine forests could be allowed to age and develop structural characteristics approximating those of the historic forest, to allow study of their habitat value.

Important sites include the Overmeyer Hills complex, an extensive area of dry forest on sandstone ridges within the Black River State Forest (Jackson County), Quincy Bluff and Wetlands State Natural Area (Adams County), Mirror Lake State Park (Sauk County), and Dells of the Wisconsin River State Natural Area (Columbia County). Efforts should be made to maintain or enhance connectivity among large forested areas, including state, county and industrial forests.

Additional Considerations for Central Sands Pine – Oak Forest in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management of Central Sands Pine – Oak Forest

No Ecological Landscapes with important opportunities were identified. However, there are forests in the Northwest Sands, Northeast Sands, and Western Coulees and Ridges Ecological Landscapes that resemble those described from Central Wisconsin, but more sampling and data analysis are necessary to clarify community level relationships.